

## **REMARKS/ARGUMENTS**

Applicants have studied the Office Action dated May, 12, 2005 and have made amendments to the specification and drawings. The claims have not been amended. It is submitted that the application, as amended, is in condition for allowance. Claims 1-22 are pending. Reconsideration and allowance of the pending claims in view of the following remarks is respectfully requested.

### **Objection to the Drawings**

On page 2 of the Office Action, the Examiner requests that FIG. 4 be marked as Prior Art. Applicants respectfully disagree that the FIG. 4 is Prior Art. FIG. 2, which shows a preferred embodiment to the present invention, includes ADC 115. FIG. 4 simply shows a detailed view of inventive element 115, as used in the preferred embodiment, which is shown with multiple inputs, as well as the phase generator 470. It is therefore submitted that the ADC 115, as shown in FIG. 4, is not prior art and the Examiner's objection should be removed.

On page 2 of the Office Action, the Examiner requests that FIG. 4 be amended to show a plurality of comparators 410. FIG. 4, as originally filed, included an ellipsis above and an ellipsis below the comparator 410 indicating a plurality of comparators. FIG. 4 has been amended to identify the ellipses by identification number 411. In addition, the paragraph starting on line 1 of page 14 has been amended to explain that the ellipses are intended to represent a plurality of comparators. It is therefore submitted that the Examiner's objection should be removed.

### **Independent Claims 21 & 22**

It is initially noted that the Examiner has rejected claims 1-6, 10, and 14 and has objected to claims 7-9, 11-13, and 15-20. However, claims 21 and 22 remain in the application and have not been addressed by the Examiner. Both claim 21 and claim 22 recite "*estimating an analog correction signal*," which the Examiner, on page 4 of the Office Action, recognizes is not shown in the admitted prior art. For purposes of this response, the Applicants assume claims 21 and 22 are deemed to be allowable or, in light of following remarks, are allowable for the same reasons that claim 1 is allowable.

### **Claim Rejections - under 35 USC § 103 Debord et al.**

The Examiner rejected Claims 1-6, 10, and 14 under 35 U.S.C. 103 as being unpatentable over the Admitted Prior Art APA, in view of Debord et al. (U.S. Patent No. 4,251,803).

The present invention is an analog-to-digital converter which corrects offset errors that occur during the conversion from analog to digital. Specifically, the technical problem addressed by the present invention is reducing the offset errors introduced by the parallel quantizers. See FIG. 1 and page 2, lines 7-14 of the instant application. The offset problem is particularly acute in multistage converters, since the offset can involve an overflow of the downstream stages. Page. 2, line 22-page 3, line 14 of the instant application.

As recited in claim 1 of the instant application, the present invention solves the above-described problem by using a feedback signal for each stage of interest, which feedback signal is *indicative of the mean value* of the

corresponding digital residue caused by a *quantization error*. See claim 1. Therefore, the present invention provides “*means for estimating an analog correction signal*”. See claim 1. The invention exploits signals that are already available in the downstream stages. Moreover, this solution operates in the digital domain and does not adversely affect the stability of the converter. Page 18, lines 19-20.

Debord et al. attempts to solve a different problem than does the present invention. The problem addressed by Debord et al. is the reduction of zero-level offset that is generated by devices of the conversion chain. Debord et al. col. 1, lines 53-57. As Debord et al. explains, when devices perform operations on analog signals, a DC voltage component is added. Debord et al. col. 1, lines 19-32.

For this reason, Debord et al. discloses a completely different converter (i.e., a single stage converter) than does the present invention. See Debord et al., col. 1, lines 34-52. Debord et al. develops a correction signal that is based on the sign of the digital signal that is output by the converter. See Debord et al., col. 2, lines 43-60 and col. 4, lines 48-58.

The approach disclosed by Debord et al. only applies to analog signals having zero mean value. Debord et al. col. 2, lines 28-37. Contrary to the Examiner’s statement on page 4 of the Office Action (“*Debord’s correction signal is the functional equivalent to the recited analog correction signal.*”), Debord et al. actually *teaches away* from the present invention by generating a correction signal **according to the sign bit** of the output signal (i.e., **its most significant bit**). Prior art that teaches away is per se demonstration of lack of prima facie obviousness.<sup>1</sup>

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<sup>1</sup> See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

In sharp contrast with Debord et al., the present invention identifies, in the output  $U(z)$ , the digital residue introduced by the quantizer error. This error is located in the **least significant bits** of the output signal and is generated in a non-analogous way. Page 9, lines 10-16, page 8, line 23 through page 9, line 8, and see FIG. 1. Therefore, the means for estimating an analog correction signal is not equivalent to the correction signal of Debord et al.

When there is no suggestion or teaching in the prior art for a claimed limitation the suggestion can not come from the Applicant's own specification. The Federal Circuit has repeatedly warned against using the Applicant's disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings of the prior art. See MPEP § 2143 and Grain Processing Corp. v. American Maize-Products, 840 F.2d 902, 907, 5 USPQ2d 1788 1792 (Fed. Cir. 1988) and In re Fitch, 972 F.2d 160, 12 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). The prior art reference Debord et al. taken alone and/or in view of the admitted prior art does not even suggest, teach or mention means for estimating analog correction signal, as recited for the presently claimed invention.

It is accordingly believed to be clear that Debord et al., whether taken alone or in any combination with the admitted prior art neither shows nor suggests the features of claim 1. Claim 1 is, therefore, believed to be patentable over the cited art. Dependent claims 2-20 are believed to be patentable as well because they all are ultimately dependent on claim 1, and the Examiner's rejection should be withdrawn.

### **Conclusion**

The foregoing is submitted as full and complete response to the Official Action mailed May 12, 2005, and it is submitted that Claims 1-22 are in condition

for allowance. Reconsideration of the rejection is requested. Allowance of Claims 1-22 is earnestly solicited.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references.

Applicants acknowledge the continuing duty of candor and good faith to disclose information known to be material to the examination of this application. In accordance with 37 CFR § 1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and the attorneys.

**If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, or that in any way it would help expedite the prosecution of the patent application, a telephone call to the undersigned at (561) 989-9811 is respectfully solicited.**


The Commissioner is hereby authorized to charge any fees that may be required or credit any overpayment to Deposit Account 50-1556.

In view of the preceding discussion, it is submitted that the claims are in condition for allowance. Reconsideration and re-examination is requested.

Respectfully submitted,

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**Amendments to the Drawings:**

The attached sheets of drawings includes changes to FIGs. 3 & 4. These sheets, which include FIGS. 3 & 4, replace the original sheets. In Figure 3, the word "Sinc" in block 310 has been amended to read "Sync." In Figure 4, the reference number 411 has been added to identify the ellipses shown in the drawing.

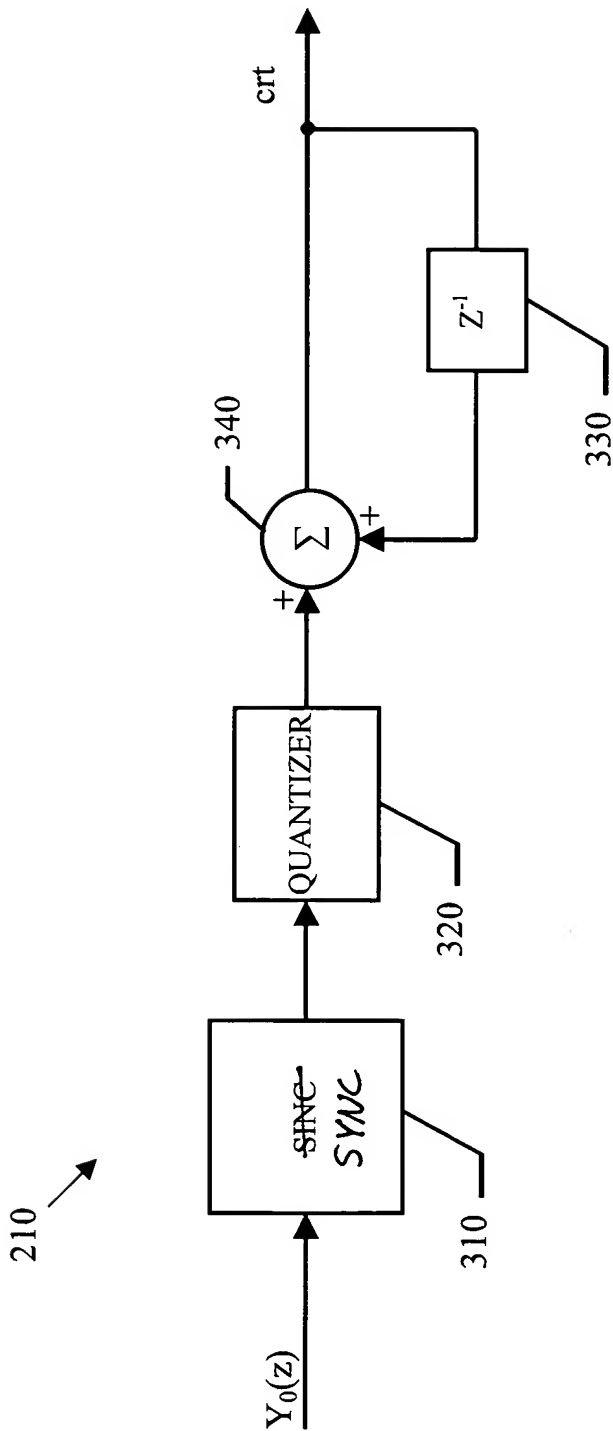
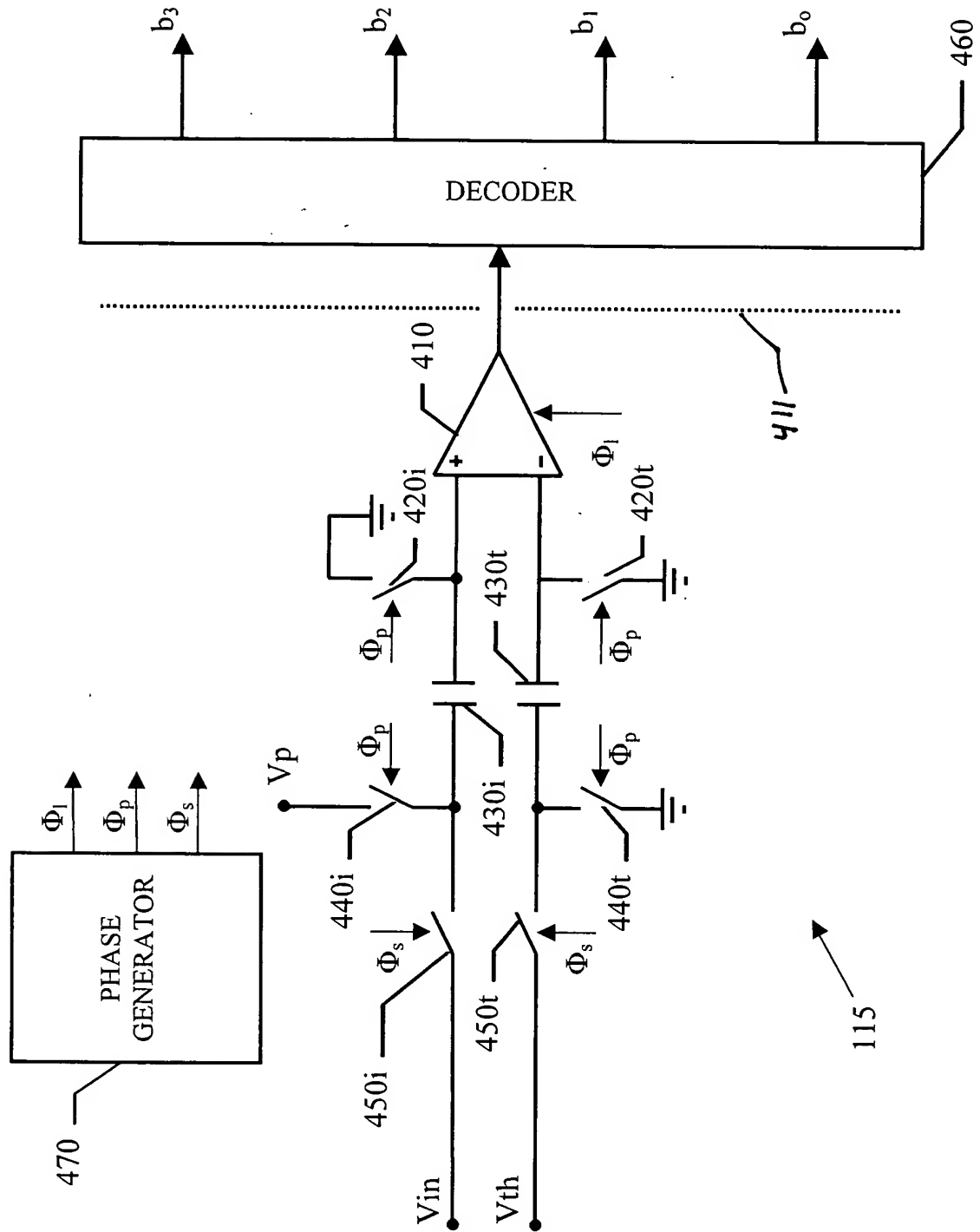


FIG.3



FIG.4